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| 09/901,930 | 07/09/2001 | Jae-Yoon Sim | 9898-204 | 7100 |

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MARGER JOHNSON & McCOLLOM, P.C.
1030 S.W. Morrison Street
Portland, OR 97205

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| EXAMINER |
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CUNNINGHAM, TERRY D

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| ART UNIT | PAPER NUMBER |
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2816

DATE MAILED: 02/19/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

K.S.D.

Office Action Summary

Application No.

09/901,930

Applicant(s)

SIM ET AL.

Examiner

Terry D. Cunningham

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-- The MAILING DATE of this communication appears on the cover sheet with the corresponding address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12 December 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-63 is/are pending in the application.
- 4a) Of the above claim(s) 25-63 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-24 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 6, 13 and 24 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. Since the claim is not claiming a memory circuit, it is not understood what a “word line precharge signal” would be with respect to a “voltage generator”.

Examiner has considered Applicant’s remarks and such are not understood. These claims still recite a “voltage generator” and corresponding method, not a memory circuit. The discussed relevance in these claims is still not understood. A “voltage generator” would not generally have a “word line precharge signal” per se.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Park (USPN 5,367,489).

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With respect to claims 1, 3, 6-8, 13, 17-20, 23 and 24, Park et al. discloses, in Fig. 1B, a circuit comprising: “a boosted voltage (V_{CC} or voltage at top of C6) having a first polarity”; “a second voltage (V_{PP}) having a second polarity”; “a first charge pump (C5, C6 and the unlabelled transistors connected thereto)”; “an oscillator (OSC)”; “a second charge pump (C1-C4, G1-G4 and unlabelled transistors receiving ϕ_{PHB})”; “a word line precharge signal (ϕ_{PHB} , see Col. 1)”, all connected and operating similarly as recited by Applicant.

With respect to claims 1-5, 7-12 and 15-23, Park et al. discloses, in Fig. 6, 7A and 7B, a circuit comprising: “a boosted voltage (V_{CC} or voltage at top of C6) having a first polarity”; “a second voltage (V_{PP}) having a second polarity”; “a first charge pump (130a)”; “an oscillator (110)”; “a second charge pump (130b)”; “a precharge signal (from precharge circuit 160 and/or 170)”; a “regulator (900)”; and “means for detecting (700)”, all connected and operating similarly as recited by Applicant.

This new rejection is provided because nowhere do the claims state that the “second polarity” is different from the “first”. With the present claim breadth, it is seen that such can include both the “first polarity” and the “second polarity” being the same.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-24 are also rejected under 35 U.S.C. 103(a) as being unpatentable over Park (USPN 5,367,489) in view of Soneda et al. (USPN 5,856,918).

With respect to claims 1, 3, 6-8, 13, 17-20, 23 and 24, Park et al. discloses, in Fig. 1B, a circuit comprising: “a boosted voltage (V_{CC} or voltage at top of C6) having a first polarity”; “a second voltage (V_{PP}) having a second polarity”; “a first charge pump (C5, C6 and the unlabelled transistors connected thereto)”; “an oscillator (OSC)”; “a second charge pump (C1-C4, G1-G4 and unlabelled transistors receiving ϕ_{PHB})”; “a word line precharge signal (ϕ_{PHB} , see Col. 1)”. The reference to Park et al. fails to explicitly disclose using the alternate arrangement wherein the charge pump generates a negative voltage. However, it is notoriously well known in the art that many environments require a negative voltage word line rather than a positive boosted voltage. It is further notoriously well known in the art, as seen in Figs. 2, 4, 8 and 10 of Soneda et al. that to convert a voltage doubler to a negative voltage generator, it requires changing the conductivity types of the transistors of the charge pumps and changing the polarity of the clock signal. Therefore, to obtain the advantages of use in a negative voltage environment, it would have been obvious for one skilled in the art to convert the voltage doubler in Park et al. to a negative voltage generator such as disclosed by Soneda et al.

With respect to claims 1-5, 7-12 and 15-23, Park et al. discloses, in Fig. 6, 7A and 7B, a circuit comprising: “a boosted voltage (V_{CC} or voltage at top of C6) having a first polarity”; “a second voltage (V_{PP}) having a second polarity”; “a first charge pump (130a)”; “an oscillator (110)”; “a second charge pump (130b)”; “a precharge signal (from precharge circuit 160 and/or 170)”; a “regulator (900)”; and “means for detecting (700)”. Similarly as above, Figs. 6, 7A and 7B the reference to Park et al. fails to explicitly disclose using the alternate arrangement wherein the charge pump generates a negative voltage. However, it would have been obvious for one

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skilled in the art to convert the voltage doubler in Park et al. to a negative voltage generator such as disclosed by Soneda et al., for similar reasons as discussed above.

Examiner has fully considered Applicant's remarks for the above rejection and has not found them to be persuasive.

Firstly, Examiner is confused by Applicant's somewhat bizarre statement that a "voltage pumping circuit...is not a charge pump". Examiner contends that one skilled in the art would be quite aware of the fact that the phrases "voltage pumping circuit" and "charge pump" are synonymous. There is no question that the circuit in Fig. 1B of Park is a "charge pump". Clearly, such is a pumping circuit that uses charge to provide a boosted voltage. There are several US Patents subclasses dealing with the types of circuits.

Also, for completeness it is noted that there are generally two types of charges pumps. One type is where the voltage on a capacitor is charged up or down. These types of charge pumps are generally used in phase-lock-loop circuits. The second types is where a supply voltage level is either boosted (or pumped) or inverted (i.e., made negative).

Applicant further argues as follows:

However, even if the teaching of Soneda was combined with Park, Soneda FIG. 10J illustrates that the output V_{outB} ranges between ground and $-3V_{cc}$. In other words, Soneda's voltage generator is not configured to bias a word line from a boosted voltage having a first polarity to a second voltage having a second polarity, as recited in claim 1. In sum, neither Park nor Soneda are directed towards a back biasing scheme for the word lines of non-selected memory cells as taught by the applicant (see, e.g., page 1, lines 15-18; page 2, lines 3-13; page 5, lines 1-4).

Firstly, nowhere are these remarks discussing the combination of references, there are merely discussing the references individually. Secondly, Examiner is only relying on Soneda for the conversion of the charge pump, not the boosted levels provided thereby. Thirdly, if Soneda is providing a voltage range of 0 to $-3V_{cc}$ (read as $3*V_{cc}$), it is not at all understood why such

cannot be used for biasing a word line nor has Applicant provided any reason to that effect. And lastly, since the modified circuit of Park is capable of providing biasing to a "word line", such meets this intended use recitation.

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

Conclusion


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Terry Cunningham whose telephone number is 571-272-1742. The examiner can normally be reached on Monday-Thursday from 7:30 to 6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy P. Callahan can be reached on 571-272-1740. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is 703-308-0956.

TC
February 17, 2004


Terry D. Cunningham
Primary Examiner
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